REMARKS/ARGUMENTS

The Applicants have carefully considered this Application in connection with the Examiner's Action and respectfully request reconsideration of this Application in view of the foregoing amendment and the following remarks.

The Applicants originally submitted Claims 1-20 in the Application. The Applicants have amended Claims 1, 6, 8, 13, and 15 in the present Amendment. These amendments made for reasons of clarification of claim elements, and are not intended to restrict claim scope. Accordingly, Claims 1-20 are currently pending in the Application.

I.   Rejection of Claims 1-4, 6-11, 13-18 and 20 under 35 U.S.C. §103

The Examiner has rejected Claims 1-4, 6-11, 13-18 and 20 under 35 U.S.C. §103(a) as being unpatentable over U.S. Publication No. 2002/0085578 to Dell, *et al.* ("Dell") in view of U.S. Publication No. 2001/0050916 to Krishna, *et al.* ("Krishna") and in further view of U.S. Patent No. 6963572 to Carr *et al.* ("Carr"). The Examiner has rejected Claims 5, 12 and 19 under 35 U.S.C. §103(a) as being unpatentable over Dell in view Krishna and Carr in further view of U.S. Patent No. 6,975,638 to Chen, *et al.* ("Chen").

Claim 1 is generally directed to a non-blocking crossbar. The non-blocking crossbar comprises n inputs, n numbering at least two. The non-blocking crossbar further comprises n outputs, each of the outputs having a destination first-in, first-out buffer (FIFO) and n crossbar FIFOs interposing corresponding ones of the n inputs and the destination FIFO. The non-blocking crossbar also comprises a scheduler configured to cause a plurality of packets *that are unsegmented and of*

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differing lengths to be transmitted from one of the inputs toward one of the outputs only when both

the destination FIFO associated therewith and an interposing one of the crossbar FIFOs have

sufficient memory to *contain an entirety of a packet, which is unsegmented.* (Emphasis added).

As discussed in previous Amendments for the above Application, filed June 7, 2006, Dell is

directed a switching stage that employs crossbar devices. (*See* page 2, paragraph [0013]). In Dell,

the "switch fabric of the present invention is a cell-switching engine handling *fixed-sized* switching

cells." (*See* page 6, paragraph [0090]). Dell uses one or more crossbars to achieve scalability in self-

routing of cells. (*See* page 2, paragraph [0012]). Krishna is also directed to cell switching.

(Abstract). Chen is directed to interleaved weighted fair data packet queue sentencing. (Abstract).

As also discussed in the previous Amendment, in Dell, "[a] switching cell has a header and

a payload. The payload size is programmable... The term 'programmable' implies that ... the

particular payload size is selected when the fabric switch is initially configured. Once the switch

fabric is configured, the payload size remains *fixed* for all subsequent switch fabric operations." (*See*

page 6, paragraph [0090]; emphasis added). As discussed in previous Amendments, the cells of Dell

are not "packets" as claimed in Claim 1. The unsegmented packets of Claim 1 can be of *a plurality*

of lengths; in contrast, the Dell's cells are *fixed* length.

The Examiner admits, and the Applicants agree, that Dell does not specifically disclose

transferring a plurality of packets of differing lengths through the crossbar. (*See* Examiner's Action,

page 3.)

However, the Examiner then states that Carr discloses transferring a plurality of packets of

differing lengths through a crossbar:

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(See column 1, lines 46-61, column 2, line 43 to column 3, lines 13, and column 4 lines 62 to column 5, line 10 of Carr et al. for reference for receiving packets of variable lengths with the packets including a length parameter filed, *segmenting the variable length packets in to fixed length cells, and transferring fixed length cells through a crossbar*. . (*See* Examiners' Action, page 6; Emphasis added.)

Carr, column 2, line 43 - column 3, line 13 states:

Generally, the present invention provides a method and apparatus for segmenting and forwarding data packets received in a communication switch. The method begins by receiving a packet that includes fields (e.g. packet destination, packet source, interface, etc.) that determine forwarding parameters. As the packet is being received, *segmentation cells are created from portions of the packet received* where each segmentation cell is provided to a switching fabric as soon as creation of the segmentation cell is completed. (Emphasis added.)

Carr, Column 3, lines 1-13 states:

By separating the received packet into the segmentation cells as it is being received and forwarding the segmentation cells *immediately* upon completion of their creation, the latency and buffering requirements of prior art segmentation and forwarding systems is greatly reduced. Additionally, the presentation of the segmentation cells to the backplane, or switching fabric, of the switch occurs in a more uniform manner over time such that bandwidth spikes on the backplane are minimized. (Emphasis added.)

Claim 1 as presently amended, however, clarifies that the packets of differing lengths to be transmitted are *unsegmented* packets. Therefore, Dell in combination of Carr and Krishna do not disclose or suggest the invention Claim 1 states it to be.

Furthermore, there is no motivation to combine Dell with Krisha and Carr to arrive at the invention of Claim 1. As referenced above, Dell is directed to scaling through the use of multiple crossbars to increase throughput, *i.e.*, using a distributed network of crossbars. Krishna is also directed to cell switching. (Abstract).

The Examiner states:

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> It would have been obvious for one of ordinary skill in the art … when presented
> with the work of Krishna et al, to combine a crossbar having n inputs and n outputs
> with each output having n crossbar FIFO buffers, with the system and method of
> Dell et al., with the motivation being to allow a destination FIFO buffer separate
> access to packets from each input such that packets may be sent to their destination
> in the most efficient manner. (*See* Examiner's Action, page 6.)

The Applicants respectfully disagree with the Examiner. There is no motivation to combine
to arrive at the current invention of Claim 1, which recites a non-blocking crossbar that comprises a
scheduler configured to cause a plurality of *unsegmented* packets *that are of differing lengths* to be
transmitted from one of the inputs toward one of the outputs only when both the destination FIFO
associated therewith and an interposing one of the crossbar FIFOs h*ave sufficient memory* to contain
an entirety of a packet of the plurality of *unsegmented* packets.

Krishna employs an arbitration algorithm called:

> Lowest Occupancy Output First Algorithm (LOOFA). According to this invention,
> input ports request transfers with output ports based upon which output port has the
> lowest occupancy rating (i.e., lowest amount of queued cells or packets) in the output
> buffers in the output port. After requests are generated for input ports, output ports
> may then select an input port requesting data transfer according to an input selection
> algorithm, and "grant" permission for the selected input port to transfer a cell or
> packet. (*See* paragraph [0019]).

One of ordinary skill in the art would not be motivated to combine Dell, which is directed to
using a distributed network of crossbars, with Krishna which uses algorithms, such as LOOFA, to
select an output port, to arrive at the present invention of Claim 1. The algorithms of Krishna, such
as LOOFA, just account for the *occupancy rating* of cells for an output port, not whether there is
sufficient memory to contain an entirety of an unsegmented packet. The present invention of Claim
1, however, comprises a scheduler configured to cause a plurality of *unsegmented* packets *that are of*
differing lengths to be transmitted from one of the inputs toward one of the outputs only when both

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the destination FIFO associated therewith and an interposing one of the crossbar FIFOs have

sufficient memory to contain *an entirety of an unsegmented packet* of the plurality of *unsegmented*

packets.

Dell, individually or in combination variously with Krishna, Carr and Chen, fails to teach

or suggest the invention recited in independent Claims 1, 8, and 15 and their dependent claims, when

considered as a whole. Claims 1-20 are therefore not obvious in view of Dell, Krishna, Carr and

Chen.

The Applicants state that the cited references do not support the Examiner's rejection of

Claims 1-20 under 35 U.S.C. §103(a). The Applicants therefore respectfully request the Examiner

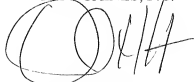withdraw the rejection and allow issuance thereof.

II.   Conclusion

In view of the foregoing amendment and remarks, the Applicants now see all of the claims currently pending in this Application to be in condition for allowance and therefore earnestly solicit a Notice of Allowance for Claims 1-20. Applicants, however, reserve the right to traverse arguments or characterizations in the present Examiner's Action that are not specifically addresses in the present Amendment.

The Applicants request the Examiner to telephone the undersigned attorney of record at (972) 480-8800 if such would further or expedite the prosecution of the present Application. The Commissioner is hereby authorized to charge any fees, credits or overpayments to Deposit Account 08-2395.

Respectfully submitted,

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